

IN THE UNITED STATES PATENT
AND TRADEMARK OFFICE

APPLICATION FOR
UNITED STATES UTILITY PATENT

APPARATUS IDENTIFICATION SYSTEMS AND METHODS

Extra Set Claims - 1- 46 - For PTO Examiner

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CLAIMS:

1. A member comprising

a body,

the body having two spaced-apart ends and at least a portion comprising a generally cylindrical portion, the generally cylindrical portion having a circumference,

radio frequency identification apparatus with integrated circuit apparatus and antenna apparatus within the generally cylindrical portion of the body, and

the antenna apparatus encircling the circumference of the cylindrical portion at an end of the body.

2. The member of claim 1 wherein

the body has a first end spaced-apart from a second end, and

the radio frequency identification apparatus positioned within the first end of the body.

3. The member of claim 2 wherein

the first end of the body has a recess in the first end, and

the radio frequency identification apparatus is within the recess.

4. The member of claim 3 wherein

a protector in the recess covers the radio frequency identification apparatus.

5. The member of claim 2 wherein the body comprises a pipe.

6. The member of claim 5 wherein the first end is a pin end of the pipe.

7. The member of claim 5 wherein an end of the pipe has an exterior shoulder and the radio frequency identification apparatus is within the shoulder.

8. The member of claim 2 wherein the second end is a box end of the pipe.

9. The member of claim 2 wherein the first end is threaded externally and the second end is threaded internally.

1 10. The member of claim 1 wherein

2 the member is a piece of drill pipe with an
3 externally threaded pin end spaced-apart from an internally
4 threaded box end, and the body is generally cylindrical and
5 hollow with a flow channel therethrough from the pin end to
6 the box end,

7 the pin end having a pin end portion with a pin end
8 recess therearound, and

9 the radio frequency identification apparatus within
10 the pin end recess and the antenna apparatus encircling the
11 pin end portion.

1 11. The member of claim 10 wherein a protector in the pin end
2 recess covers the radio frequency identification apparatus therein.

1 12. The member of claim 11 wherein the protector is a cap
2 ring within the pin end recess which covers the radio frequency
3 identification apparatus.

1 13. The member of claim 11 wherein the protector is an amount
2 of protective material in the recess which covers the radio
3 frequency identification apparatus.

1 14 The member of claim 10 further comprising

2 the box end having a box end portion having a box
3 end recess therein,

4 a box end radio frequency identification apparatus
5 within the box end recess, the box end radio frequency
6 identification apparatus having antenna apparatus and
7 integrated circuit apparatus, said antenna encircling the box
8 end portion.

1 15. The member of claim 14 wherein a protector in the box end
2 covers the radio frequency identification apparatus therein.

1 16. The member of claim 4 wherein the recess has a cross-
2 section shape from the group consisting of square, rectangular,
3 semi-triangular, rhomboidal, triangular, trapezoidal, circular, and
4 semi-circular.

1 17. The member of claim 1 wherein the generally cylindrical

2 portion is part of an item from the group consisting of pipe, drill
3 pipe, casing, drill bit, tubing, stabilizer, centralizer, cementing
4 plug, buoyant tubular, thread protector, downhole motor, whipstock,
5 mill, and torus.

1 18. The member of claim 1 further comprising

2 the member comprising a piece of pipe with a pin
3 end, the pin end having a recess therein, and sensible indicia
4 in the recess.

1 19. The member of claim 18 wherein the sensible indicia is
2 from the group consisting of raised portions, indented portions,
3 visually sensible indicia, spaced-apart indicia, numeral indicia,
4 letter indicia, and colored indicia.

1 20. The member of claim 1 further comprising

2 the body having a side wall with an exterior surface
3 and a wall recess in the side wall, the wall recess extending
4 inwardly from the exterior surface, and

5 secondary radio frequency identification apparatus
6 within the wall recess.

1 21. The member of claim 1 wherein the radio frequency
2 identification apparatus comprises a plurality of radio frequency
3 identification tag devices.

1 22. A tubular member comprising

2 a body with a first end spaced-apart from a second
3 end, the first end comprising a pin end having a pin end
4 recess in the first end and identification apparatus in the
5 pin end recess, and

6 a protector in the pin end recess protecting the
7 identification apparatus therein.

1 23. A method for sensing a wave energizable identification
2 apparatus in a member, the member comprising a body, the body
3 having at least a portion thereof comprising a generally
4 cylindrical portion, the generally cylindrical portion having a
5 circumference, wave energizable identification apparatus with
6 antenna apparatus within the generally cylindrical portion of the

7 body, and the antenna apparatus encircling the circumference of the
8 cylindrical portion of the body, the method including

9 energizing the wave energizable identification
10 apparatus by directing energizing energy to the antenna
11 apparatus,

12 the wave energizable identification apparatus upon
13 being energized producing a signal,

14 positioning the member adjacent sensing apparatus,
15 and

16 sensing with the sensing apparatus the signal
17 produced by the wave energizable identification apparatus.

1 24. The method of claim 23 wherein the sensing apparatus is
2 on an item from the group consisting of rig, elevator, spider,
3 derrick, tubular handler, tubular manipulator, tubular rotator, top
4 drive, mouse hole, powered mouse hole, or floor.

1 25. The method of claim 23 wherein the sensing apparatus is
2 in communication with and is controlled by computer apparatus, the
3 method further comprising

4 controlling the sensing apparatus with the computer
5 apparatus.

1 26. The method of claim 23 wherein the energizing is effected
2 by energizing apparatus in communication with and controlled by
3 computer apparatus, the method further comprising

4 controlling the energizing apparatus with the
5 computer apparatus.

1 27. The method of claim 23 wherein the signal is an
2 identification signal identifying the member and the sensing
3 apparatus produces and conveys a corresponding signal to computer
4 apparatus, the computer apparatus including a programmable portion
5 programmed to receive and analyze the corresponding signal, and the
6 computer apparatus for producing an analysis signal indicative of
7 accepting or rejecting the member based on said analysis, the
8 method further comprising

9 the wave energizable identification apparatus,

10 producing an identification signal received by the
11 sensing apparatus,

12 the sensing apparatus producing a corresponding
13 signal indicative of identification of the member and
14 conveying the corresponding signal to the computer apparatus,
15 and

16 the computer apparatus analyzing the corresponding
17 signal and producing the analysis signal.

1 28. The method of claim 23 wherein the computer apparatus
2 conveys the analysis signal to handling apparatus for handling the
3 member, the handling apparatus operable to accept or reject the
4 member based on the analysis signal.

1 29. The method of claim 27 wherein the member is a tubular
2 member for use in well operations and the handling apparatus is a
3 tubular member handling apparatus.

1 30. The method of claim 28 wherein the tubular member
2 handling apparatus is from the group consisting of tubular
3 manipulator, tubular rotator, top drive, tong, spinner, downhole
4 motor, elevator, spider, powered mouse hole, and pipe handler.

1 31. The method of claim 28 wherein the handling apparatus has
2 handling sensing apparatus thereon for sensing a signal from the
3 wave energizable identification apparatus, and wherein the handling
4 apparatus includes communication apparatus in communication with
5 computer apparatus, the method further comprising

6 sending a handling signal from the communication
7 apparatus to the computer apparatus corresponding to the
8 signal produced by the wave energizable identification
9 apparatus.

1 32. The method of claim 29 wherein the computer apparatus
2 controls the handling apparatus.

1 33. The method of claim 20 wherein the member is a tubular
2 member and wherein the sensing apparatus is connected to and in
3 communication with a tubular inspection system, the method further
4 comprising

5 conveying a secondary signal from the sensing
6 apparatus to the tubular inspection system, the secondary
7 signal corresponding to the signal produced by the wave
8 energizable identification apparatus.

1 34. The method of claim 31 wherein the signal produced by the
2 wave energizable identification apparatus identifies the tubular
3 member.

1 35. A method for handling drill pipe on a drilling rig, the
2 drill pipe comprising a plurality of pieces of drill pipe, each
3 piece of drill pipe comprising a body with an externally threaded
4 pin end spaced-apart from an internally threaded box end, the body
5 having a flow channel therethrough from the pin end to the box end,
6 radio frequency identification apparatus with integrated circuit
7 apparatus and antenna apparatus within the pin end of the body, and
8 the antenna apparatus encircling the pin end, the method including
9 energizing the radio frequency identification
10 apparatus by directing energizing energy to the antenna
11 apparatus,

12 the radio frequency identification apparatus upon
13 being energized producing a signal,

14 positioning each piece of drill pipe adjacent
15 sensing apparatus, and

16 sensing with the sensing apparatus a signal produced
17 by each piece of drill pipe's radio frequency identification
18 apparatus.

1 36. The method of claim 35 wherein the sensing apparatus is
2 in communication and is controlled by computer apparatus and
3 wherein the radio frequency identification apparatus produces an
4 identification signal receivable by the sensing apparatus, and
5 wherein the sensing apparatus produces a corresponding signal
6 indicative of the identification of the particular piece of drill
7 pipe, said corresponding signal conveyable from the sensing
8 apparatus to the computer apparatus, the method further comprising
9 controlling the sensing apparatus with the computer

10 apparatus,

11 wherein the energizing is effected by energizing
12 apparatus in communication with and controlled by computer
13 apparatus, the method further comprising controlling the
14 energizing apparatus with the computer apparatus,

15 wherein the signal is an identification signal
16 identifying the particular piece of drill pipe and the sensing
17 apparatus conveys a corresponding signal to computer
18 apparatus, the computer apparatus including a programmable
19 portion programmed to receive and analyze the corresponding
20 signal, the computer apparatus for producing an analysis
21 signal indicative of accepting or rejecting the particular
22 piece of drill pipe based on said analysis, the method further
23 comprising

24 the computer apparatus analyzing the corresponding
25 signal and producing the analysis signal, and

26 the computer apparatus conveying the analysis signal
27 to handling apparatus for handling the member, the handling
28 apparatus operable to accept or reject the member based on the
29 analysis signal.

1 37. A system for handling a tubular member, the system
2 comprising

3 handling apparatus, and

4 a tubular member in contact with the handling
5 apparatus,

6 the tubular member comprising a body with a first
7 end spaced-apart from a second end, the first end comprising
8 a pin end having a pin end recess in the first end and
9 identification apparatus in the pin end recess, and a
10 protector in the pin end recess protecting the identification
11 apparatus therein.

1 38. The system of claim 37 wherein the handling apparatus is
2 from the group consisting of tubular manipulator, tubular rotator,
3 top drive, tong, spinner, downhole motor, elevator, spider, powered

4 mouse hole, and pipe handler.

1 39. A ring comprising

2 a body with a central hole therethrough, the body
3 having a generally circular shape,

4 the body sized and configured for receipt within a
5 circular recess in an end of a generally cylindrical member
6 having a circumference,

7 wave energizable identification apparatus within the
8 body,

9 the wave energizable identification apparatus having
10 antenna apparatus, and

11 the antenna apparatus extending around a portion of
12 the body.

1 40. The ring of claim 39 further comprising

2 sensible indicia on or in the body.

1 41. A ring comprising

2 a body with a central hole therethrough, the body
3 having a central hole therethrough

4 the body sized and configured for receipt within a
5 circular recess in an end of a generally cylindrical member
6 having a circumference,

7 identification apparatus within or on the body, and
8 the identification apparatus comprising sensible
9 indicia.

1 42. A method for making a tubular member, the method
2 comprising

3 making a body for a tubular member, the body having
4 a first end spaced-apart from a second end, and

5 forming a recess around the end of the body, the
6 recess sized and shaped for receipt therein of wave
7 energizable identification apparatus.

1 43. The method of claim 42 including

2 installing wave energizable identification apparatus
3 in the recess.

1 44. The method of claim 43 further comprising
2 installing a protector in the recess over the wave
3 energizable identification apparatus.

1 45. The method of claim 44 wherein the tubular member is a
2 piece of drill pipe with an externally threaded pin end spaced-
3 apart from an internally threaded box end, the recess is a recess
4 encircling the pin end, and the wave energizable identification
5 apparatus has antenna apparatus, the method further comprising
6 positioning the antenna apparatus around and within
7 the pin end recess.

1 46. A method for enhancing a tubular member, the tubular
2 member having a generally cylindrical body with a first end spaced-
3 apart from a second end, the method comprising

4 forming a circular recess in an end of the tubular
5 member, the recess sized and shaped for receipt therein of
6 wave energizable identification apparatus, the wave
7 energizable identification apparatus including antenna
8 apparatus with antenna apparatus positionable around the
9 circular recess.